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MONSANTO CHEMICAL COMPANY
Department 260
Monsanto, St. Clair Co., Illinois

CC: Messrs. J. W. Livingston
D. S. Dinsmoor
W. J. Wiegand
J. F. Stickley
Major W. L. Finley (2)

May 8, 1942

Mr. W. G. Krummrich:

Subject: Monthly Operation Report. April 1942.

During the month of April Department 260 production has been gradually increased from an average of approximately 13,000 pounds per week to 26,500 pounds per week which was attained during the period April 24 to May 1. The over-all production from March 28 to May 1 amounted to 90,473 pounds of finished CC-2. During this period yields have progressively improved and during the last week of the month we had a period of seven days operation in which the recoveries of P-1, P-2, and P-3 were practically equal to the du Pont pilot plant experience which seems to be the maximum which can be expected following the present operating directives.

In general the consumption of raw materials per unit of CC-2 were somewhat above the best operating performance but compare favorably with du Pont's average requirements. The use of S-1 was however slightly above du Pont's present consumption. The raw material requirements were decidedly better during the last week (April 24 to May 1) where the production was higher and most of the poor results can be attributed to the earlier part of the month where production was low and losses fairly high.

The quality of CC-2 shipped during the month was good, the number of sub-standard lots amounting to approximately 16% of the entire production. In all cases these sub-standard batches failed to meet the 4.25 "Insoluble Matter" specifications.

Operating difficulties have been many and varied. The principle difficulties arose due to losses of product in the Step-I and Step-III filter presses due to shrinkage of filter cloths and leakage through valves. Some product was lost thereby and more serious still was the resultant dilution of Step-I and Step-III filtrates. This difficulty was more pronounced between the period of April 17 to April 24. At the same time some trouble was experienced in maintaining the concentration of the Step-II solvent which resulted in abnormally low yields of P-2. All of these difficulties were corrected and by making piping alterations and numerous repairs to the filter presses we feel that we are better equipped to prevent a recurrence of these difficulties.

Among the most promising improvements or variations tried during April we list the following:

The use of temperatures of approximately 20 - 22°C instead of 30°C in the Step-I reactors. This we believe has minimized the formation of by-products in this reaction.

The alteration of vent piping on the Step-II reactors to segregate the distillate from the condensers which carries out some of the water and which can be redistilled for use in Step-III. This permits us to maintain a higher strength of solvent on Step-II.

The use of 5-pounds pressure on Step-II reactor in an effort to obtain a higher reflux temperature and to improve the yield. This has been tried on only two or three batches and results are so far unproven.

The use of warm water to handle Step-II slurry through the centrifuges for the purpose of removing B-4. This practice has enabled us to reduce the centrifuge cycle to only slightly more than one hour.

Mechanical difficulties have been numerous. Two Durichlor pumps have failed by developing cracks in the volutes. Practically all aluminum cocks and fittings have been replaced with Durichlor and Durimet although we hesitate to use any more Durichlor than is necessary because most of these valves have given a great deal of difficulty. Many of the lead valves and fittings, as well as the linings in the melt tanks, have given trouble due to leakage. Many of the lead valves have been replaced. Corrosion of all lead covered baffles and walls in the reactors has been severe and several replacements have been made. No defects in the enamel of the reactors have developed during April. Several reactors which were turned over to us with defective linings have been repaired during this period. So far it has been difficult for us to train a mechanical work force adequate for the numerous repairs which we have encountered.

Evaporations proceeded normally. Step-III solvent is being treated with sodium bisulfite and is heated to 80°C. All other treatments are merely heated to 80°C, cooled, and evaporated.

Weak filtrate is being discarded to the sewer.

The Monsanto work force consists of 96 operating personnel, 21 guards, and 36 salaried employees.

Generally speaking, considerable progress has been made during the month of April, the work force is becoming better able to handle the rather complicated operations, and several of the factors limiting production have been materially improved so that over-all production in May should be decidedly better.

We expect to be able to produce approximately 120,000 pounds of finished CC-2 during the coming month.

/s/ J. F. Stickley

J. F. STICKLEY

Production Superintendent

JFS/cb

C O P Y

Month

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Monthly Report Department No. 260 March 27 to May 1 19 42

CRUDE MATERIALS USED

1. No. of Material	S-1	R-1	R-1A	R-3	R-5	R-6	R-7	R-8
2. Stock First of Month March 27	450,573	105,678	2,027	3,200	183,719	134,908	16,000	215,434
3. Received	345,260	67,820	0	0	239,700	0	9,168	0
4. Total	795,833	173,498	2,027	3,200	423,419	134,908	25,168	215,434
5. Stock Last of Month May 1	332,248	92,275	1,697	3,200	41,918	83,464	25,168	139,486
6. Difference	463,585	81,223	330	0	381,501	51,444	0	75,948
7. Required to Finish Previous Month	17,344	0	0	0	10,423	3,755	0	2,221
8. Difference	446,241	81,223	330	0	371,078	47,689	0	73,727
9. Required to Finish This Month	30,313	0	0	0	8,011	5,271	0	5,534
10. Total	476,554	81,223	330	0	379,089	52,960	0	79,261
11. Credit								
12. Net Used	476,554	81,223	330	0	379,089	(1) 52,960	0	(1) 79,261
13. Per 100 Lbs. Finished Goods	526.7	89.8	.0036	0	419	58.0	0	87.6

1. No. of Material	R-10	Lime	Labor Hrs.			
2. Stock First of Month March 27	183,722	52,140	0			
3. Received	106,680	391,340	41,110			
4. Total	290,402	443,480	41,110			
5. Stock Last of Month May 1	177,748	50,615	0			
6. Difference	112,654	392,865	41,110			
7. Required to Finish Previous Month	3,194	29,302	3,708			
8. Difference	109,460	363,563	37,402			
9. Required to Finish This Month	7,922	32,010	5,491			
10. Total	117,382	395,573	42,893			
11. Credit						
12. Net Used	117,382	395,573	42,893			
13. Per 100 Lbs. Finished Goods	129.7	437.2	47.4			

REMARKS:

(1) Calculated from batch sheets

Prepared by W. C. Schroeder 5/2/42

Signed /s/ M. J. Wiegand

Date 5/8/42

Monthly Report Department No. 260, 19 42

PRODUCTION

1. Products or By-Products		CC-2					
2. Stock Last of Month 5/1/42		70,849					
3. Del'd. to Pack. Rm. or Shipped	(1)	54,450					
4. Del'd. to Perm. Storage		0					
5. Delivered to Departments		0					
6. Total 2, 3, 4 & 5		125,299					
7. Rec'd. from Packing Room		0					
8. Rec'd. from Perm. Storage		0					
9. Rec'd. from Departments.		0					
10. Stock first of Month 3/27		34,826					
11. Total 7, 8, 9, & 10							
12. Produced		90,473					
13. Per Cwt. Main Product							

YIELDS**TRANSFERS
DISTRIBUTION**

Products or By-Products		CC-2					
Yield on. R-1 (per 100#)		111.39 (42.53 % Theory)					
Yield Last Month		117.66 (47.14 % Theory)					
Standard Yield							
Theoretical Yield		261.93 (100.0 % Theory)					
Yield on R-5 (per 100#)		23.86 (27.75 % Theory)					
Yield Last Month		27.98 (32.41 % Theory)					
Standard Yield							
Theoretical Yield		85.99 (100.0 % Theory)					
Yield on.							
Yield Last Month							
Standard Yield							
Theoretical Yield							

(1) Car No. PRR 53539

C O P Y

May 1, 1942

METERED UTILITIES

March 27 to May 1, 1942

Electric consumption	230,300 K.
City Water	7,940,000 cu. ft.
Well Water	18,233,250 gal.
Steam	4,999,000

W.C.S.

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SOLVENT INVENTORY

May 1, 1942

S-1 Outside:	Stick Inches	Sp. Gr.:	Tankometer:	Tank	Dish	Total	No.	Pounds
:	(A)	(B)	In. (AxB)	Pounds:	Pounds:	Pounds:	S-1	:99.5% S-1
T-551	:	:	118	:	:	:	:	79313
T-552	:	:	41 1/4	:	:	:	:	34683
T-553	:	:	:	:	:	:	:	:
T-554	:	:	:	:	:	:	:	2063
S-1 Inside	:	:	:	:	:	:	:	<u>116059</u>
T-431	14	1.064	14.9	2758	1082	3840	96.7	3695
T-430	12	1.040	12.5	2287	1127	3414	99.7	3387
T-432	17	1.060	18	3216	1096	4312	78	3346
	:	:	:	:	:	:	:	<u>10428</u>
Step-I	:	:	:	:	:	:	:	:
T-125	71	1.19	84.5	5381	704	6085)	:
T-126	Empty	—	—	—	—	—)	:
T-157	53	1.174	62.2	12809	234	13043)	:
T-158	51	1.122	57.2	11799	234	12033)96.5	56368
T-401	32 1/2	1.179	38.3	7696	914	8610)	:
T-402	56 1/2	1.16	65.5	13080	832	13912)	:
T-413	19 1/2	1.142	22	4633	390	5023)	:
T-451	51	1.099	56	11299	220	11519	88.8	10178
	:	:	:	:	:	:	:	<u>66546</u>
Step-II	:	:	:	:	:	:	:	:
T-454	27	1.047	28.3	2313	506	2819)	:
T-255	49	1.125	55	11281	235	11516)96.7	32907
T-256	42	1.108	46.5	9479	231	9710)	:
T-452	46	1.060	48.8	9765	291	10056)	:
Step-III	:	:	:	:	:	:	:	:
T-301	52	1.111	57.8	5986	574	6560)	:
T-358	Empty	—	—	—	—	—)	:
T-359	63	1.096	69	14193	338	14531)80.0	47052
T-403	70	1.088	76.2	14854	853	15707)	:
T-404	70	1.092	76.4	15084	733	15867)	:
T-414	28	1.083	30.3	6192	253	6445)	:

Inside	156933
Outside	<u>116059</u>
	272992

In Process

(3) batches Step-I	19011
(3) batches Step-II	20205
(4) batches Step-III	<u>20040</u>

Total on hand	332248
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CC2 on HandDate 5/1/42

I FINISHED GOODS

1. On hand in warehouse 472502. On hand ready to pack 8324Total 55574

II IN PROCESS

1. Wet P-3 62022. As P-2 37173. As P-1 5356Total 15275

GRAND TOTAL 70849

W. C. Schroeder

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